NTSE STAGE 2 2020-21
MAT QUESTION PAPER

1. The following number series follows a particular pattern. One of the numbers in the given series is wrong. Identify that wrong number:

   3 15 63 129 1023 4095

   1. 15
   2. 63
   3. 129
   4. 4095

2. Rohit at a wedding asked to find the seating arrangement of the guests. There are eight guests, names Mrs. Hudson, John, Azhar, Sunita, Amber, Rajesh, Mahima and Vishal, who are supposed to sit in two rows of four chairs each, facing each other. The following information was provided:
   - Amber is between Mrs. Hudson and Vishal, but just opposite to John.
   - Rajesh is at one end of a line and is just next in the right of the John; or Rajesh is just after John.
   - Mahima, who is sitting at one end of a row, is just diagonally opposite to Mrs. Hudson (who is at the other end of the opposite row).

   Which of the following statements is/are definitely true?

   I. Vishal is just next to Amber.
   II. Azhar is just near to Vishal.
   III. Mahima is either next or opposite to Sunita.
   IV. Sunita is diagonally opposite to Rajesh.

   1. Only I and III
   2. Only II and IV
   3. Only III
   4. Only I, III and IV

Direction (Questions 3 – 4):
Read the following passage and answer the questions given below:
In the administrative structure of an academic institution, the highest body is the Executive Council (EC). There are Academic Programme Committee (APC), Finance Committee (FC), Planning Division (PD) who have to report to the EC. The Vice Chancellor chairs the APC, FC and PD while the Chancellor chairs the EC. The Schools of Studies (Science / Humanities / Social Science / Commerce / Education / Engineering and Technology) come under the jurisdiction of APC.

3. The faculty members of the School of Commerce report to the:
   1. APC
   2. FC
   3. PD
   4. EC

4. Which among the following statement is correct in respect of hierarchy?
   1. EC, APC and PD are at the same level.
   2. APC, PD and FC are at the same level.
   3. EC, APC and FC are at the same level.
   4. APC is above EC which is above FC and PD.

5. In the following question, five statements have been provided which are to be considered as true, even if they do not corroborate our real life experiences. There are followed by four conclusions as the alternatives. Now in the given statements, which one among the four conclusions is definitely false.

   Statements: Some donuts are dumb. Some dumbs are sweets. All sweets are tall. No tall is a donut. All donuts are sugar.

1. Some sweets are sugar
2. Some dumbs are tall
3. Some sugars are not dumb
4. Some talls are dumb

6. ‘ BUILD’ is related to ‘ CAWRQ’ , such that the letters having reflection symmetry with respect to a mirror placed on the right side at the same positions. Which among the following pairs bears the same relationship?
   1. EARTH : NPOQX
   2. CROWN : DABCM
   3. HOUSE : TRSHE
   4. LAUGH : GHTZL

7. An old couple with memory issues had forgotten their anniversary and were trying to recollect the date. The lady clearly remembers that they got married in the month of February of the year 1955. The man clearly remembers that he celebrated his 21st birthday with same year, and it was Thursday, the 3rd of February, as a bachelor. The lady then remembers that they definitely got married before the 13th of February. The man knows it had to be a weekend, since he was working on other days from Monday to Friday. The lady and the man then agree that it was a Sunday. Help them find the date of their wedding which was in the year 1955?
   1. 5th of February
   2. 6th of February
   3. 8th of February
   4. 12th of February

Direction (Questions 8 – 9):
Read the following information carefully and answer the questions given below:
(i) A ‘ +’ B means ‘ A’ is the mother of ‘ B’
(ii) A ‘ –‘ B means ‘ A’ is the wife of ‘ B’
(iii) A ‘ ×’ B means ‘ A’ is the brother of ‘ B’
(iv) A ‘ ÷’ B means ‘ A’ is the son of ‘ B’ .

8. If P ‘ ×’ Z ‘ ÷’ D ‘ –‘ V, then how is ‘ V’ related to ‘ P’ ?
   1. Mother
   2. Brother
   3. Daughter
   4. Father

9. If M ‘ ÷’ C ‘ +’ P ‘ –‘ L, then how is ‘ M’ related to ‘ L’ ?
   1. Son-in-law
   2. Brother
   3. Son
   4. Brother-in-law

10. The objects or words given below form a certain group. Which one of the following <u>does not</u> belong to the group?
    Spectacles, Earrings, Bicycle, Shoes, Bangles
    1. Bicycle
    2. Shoes
    3. Earrings
    4. Spectacles

11. There is a 3-digit code to open a lock. There are four 3-digit numbers and hints have been provided corresponding to those numbers to crack the code. Crack the code and mark that as your answer.
    821 – One digit is correct but wrongly placed.
    379 – None of the digit are correct.
    486 – Two digit are correct but wrongly placed.
    538 – Two digit are correct and rightly placed.
    1. 528
    2. 845
    3. 485
    4. 548

12. Rohan moves 1 km to East and then turn to South and moves 5 km. He again turns to East and walks 2 km. After this, he turns to North and moves 9 km. What is the distance from his starting point to the present point?
    1. 13 km
    2. 08 km
    3. 05 km
    4. 16 km

Direction (Questions 13 – 15):

In the following questions, the question is followed by two Statements (i) and (ii). You have to determine whether.

Only statement (i) is sufficient to answer the question.
Only statement (ii) is sufficient to answer the question.
Both statement (i) and statement (ii) are needed to answer the question.
Neither statement (i) nor statement (ii) is sufficient to answer the question.

13. What is the date today?
    Statement:
    (i) We are in the second week of March.
    (ii) The date today is an odd number.
    1. Only statement (i) is sufficient to answer the question.
    2. Only statement (ii) is sufficient to answer the question.
    3. Both statement (i) and statement (ii) are needed to answer the question.
    4. Neither statement (i) nor statement (ii) is sufficient to answer the question.

14. What is the two-digit number?
    Statements:
    (i) Both the digits of the two-digit number are even and the sum of their digits is 12.
    (ii) The two digits of the two-digit number are not the same.
    1. Only statement (i) is sufficient to answer the question.
    2. Only statement (ii) is sufficient to answer the question.
    3. Both statement (i) and statement (ii) are needed to answer the question.
    4. Neither statement (i) nor statement (ii) is sufficient to answer the question.

15. Who is the tallest amongst the four friends kimaya, Ashvi, Vihana and Pari?
    Statements:
    (i) Ashvi is not the tallest but taller then Vihana and Kimaya.
    (ii) Vihana is the shortest amongst the four friends.
    1. Only statement (i) is sufficient to answer the question.
    2. Only statement (ii) is sufficient to answer the question.
    3. Both statement (i) and statement (ii) are needed to answer the question.
    4. Neither statement (i) nor statement (ii) is sufficient to answer the question.

16. In the word ‘ PACEMAKING’ , if the first letter is interchanged with the second letter, the third letter is interchanged with the fourth letter and so on till the ninth letter is interchanged with the tenth letter, what would be the seventh letter from the right after such arrangement?
    1. E
    2. C
    3. K
    4. I

17. In the following letter series, find the letters to replace the question-mark(?) to complete the series:
ZXW VTS RPO NLK ? FDC
1. JIH 2. GHJ
3. JHG 4. IHG

18. A museum has an average of 520 visitors on Sunday and an average of 100 visitors on other days. What is the average number of visitors per day in a month of 30 days beginning with a Sunday?
1. 220 2. 170
3. 180 4. 300

19. Rishi decides to drive to a party. From his house, he drives 10 km North. There he decides to pick-up his friend, so he takes a left turn and drives for another 2 km. On picking-up his friend, he has to take a right turn and drive for another 5 km. Finally he takes another right turn and drives for another 2 km to reach his destination. How many kilometers Rishi would have required to drive, has he drove straight from his house to the party?
1. 15 km 2. 12 km
3. 10 km 4. cannot be determined

20. In a queue, Mr. X is 14^{th} from the start and Mr. Y is 17^{th} from the end, while Mr. Z is exactly in the middle of Mr. X and Mr. Y. Mr X is ahead of Mr. Y and there are 48 persons in the queue. How many persons are there between Mr. X and Mr. Z?
1. 6 2. 7
3. 8 4. 9

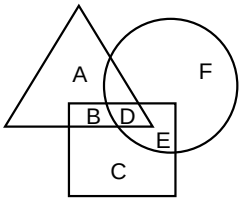
21. Find the next number in the series:
13, 13, 65, 585, 7605, 129285, ?
1. 2231252 2. 2451326
3. 242154 4. 2714985

22. Find the missing number (?) in the series:
4, 55, 576, ?, 21280, 64083, 64204
1. 608 2. 4207
3. 676 4. 726

23. Complete the series:
Z = 2197, R = 729, P = 512, J = ?
1. 625 2. 125
3. 729 4. 512

24. Sunil is the son of Anil, Shweta Anil' s sister has a son Maruti and daughter Sita. Prem is the maternal uncle of Maruti. How is Sunil related to Maruti.
1. Cousin 2. Maternal uncle
3. Brother 4. Nephew

25. In the given figure, the triangle represents girls, the square represents sports persons, and the circle represents coaches. The portions in the figure which represents girls are sports persons but not coaches is labeled as:

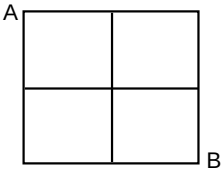


1. A
2. B
3. D
4. E

26. A dice is numbered from 1 to 6 in different ways. If 1 is adjacent to 2, 4 and 6, then which of the following statements is necessarily true?
1. 2 must be opposite to 6
2. 1 must be adjacent to 3
3. 3 must be adjacent to 5
4. 3 must be opposite to 5

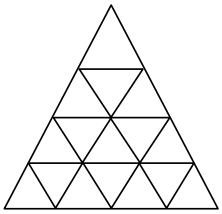
27. In certain code language ‘ sun shines brightly’ is written as ‘ ba lo sul’ , ‘ houses are brightly lit’ as ‘ kado ula ari ba’ and ‘ light comes from sun’ as ‘ dopi kup lo nro’ . What code words are written for ‘ sun’ and ‘ brightly’ ?
1. ba, sul
2. sul, lo
3. lo, ba
4. ba, lo

28. Study the following figure:



A person goes from A to B always moving to the right or downward along the lines. How many different routes can he adopt?
1. 4
2. 5
3. 6
4. 7

29. Consider the following figure and answer the items that follows:



What is the total number of triangles in the above grid?
1. 27
2. 26
3. 23
4. 22

30. Kunal walks 10 km towards North. From there, he walks 6 km towards South. Then, he walks 3 km towards East. How far and in which direction is he, with reference to his starting point?
1. 5 km west
2. 7 km west
3. 7 km east
4. 5 km north-east

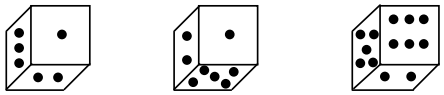
31. In a class 45% students study Mathematics, 55% study Physics, 40% study Chemistry, 30% study Mathematics and Physics, 15% study Physics and Chemistry, 25% study Mathematics and Chemistry and 10% study all three subjects. What percentage do not read any subject?

1. 10%
2. 15%
3. 25%
4. 20%

32. In a code language ‘ SOLID’ is written as ‘ WPSLPIMFHA’ . What does the code ‘ ATEXXQIBVO’ represent?

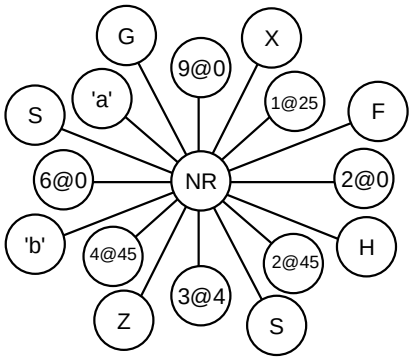
1. EAGER
2. WAFER
3. WAGER
4. WATER

33. Below are depicted the three different positions of a dice. Find the number opposite to 1 dot:



1. 2
2. 3
3. 4
4. 6

34. Find the missing value of ‘ a’ and ‘ b’ ?



1. 8@3, B
2. 7@3, G
3. 7@25, M
4. 8@25, L

Direction (Q. 35 to 36): The reasoning power and logical power of six students of a class are as follows:

1. Ruchi is more logical and have higher reasoning power than Puchi but less logical and reasoning power than Sri.
2. Nichi is more logical than Chiki who is not as logical as Puchi.
3. The least logical student has highest reasoning power.
4. The student having least reasoning power would be fourth if they all stood in a queue according to their logical power and queue started from highest logical student.
5. Nichi has lower reasoning power than Riki but higher than Chiki having better reasoning power than Sri.

35. Which of the following statement is correct?

1. Nichi has highest reasoning power in the group.
2. Puchi is most logical in the group.
3. Ruchi has higher reasoning power than Nichi.
4. Riki has least logical power.

36. Whose position in the logical power queue cannot be determined from the given statement?
    1. Puchi
    2. Nichi
    3. Sri
    4. Chiki

Direction (Q. 37): In an Immunization drive in a hospital, receptionist was asked to allow one male patient when color-code announced is Blue (B), one female patient when color-code announced is Pink(P), two male and three female patients when color-code announced is Green(G). She had been asked to allow exit of one male and two female patients from the doctor' s room when announced Red(R). The 1st sequence followed by receptionist is:
[BPGBBGPBRPBPBGGRBGBBGPPRGB]
In the 2nd sequence, she replaced ' Green' at odd position with ' Blue' code and ' Pink' at even position with ' Red' code.

37. How many female patients are still left in the hospital for immunization?
    1. 18
    2. 21
    3. 24
    4. 25

38. In a certain way, DIAMOND is coded as [2233113352722] BRONZE is coded as [223335272135] then SILVER will be coded as
    1. [223322325527]
    2. [223311332722]
    3. [1933511355213]
    4. [1933223211529]

39. The wall clock at Zebo' s house was not working properly. Zebo noticed on Tuesday noon that clock is two minutes slow. He planned to observe the behaviour of clock for a week. On next week same day, he noticed that clock was 4 min 48 sec fast at 02:00 P.M. When did the clock show the correct time?
    1. 12:48 P.M. on Wednesday
    2. 02:12 P.M. on Thursday
    3. 02:00 P.M. on Thursday
    3. 03:36 P.M. on Wednesday

Direction (Q. 40): A clock is so placed that at 12 Noon its minute hand points towards West. The mathematical operators have been placed at the minute hand position at particular time given below:
' <' at fifteen minutes before noon
' =' at ten minutes past two
' >' at half past six
' ×' at twenty minutes past seven
' +' at quarter past eight
' – ' at nine o' clock
' +' at five minutes to ten

40. Which is the correct mathematical expression based on above information?
    1. [6N4SW8NE2E9W6NE2SW3E3NE2SW1W5]
    2. [6S4NW8SE2E9W6SE2NW3E3SE2NW1W5]
    3. [6N4SW8NE2W9E6NE2SW3E3NE2SW1E5]
    4. [6S4SW8NW2W9E6NW2E3W3NE2N1E5]

41. In a coded language, the mathematical operators have been placed in clock. The position of operator is the position of minute hand. The coding is as follows ‘ +’ at 7:25, ‘ ×’ at 5:15, ‘ ÷’ at 9:00, ‘ <’ at 10:55, ‘ >’ at 3:30, ‘ =’ at 1:05, ‘ –‘ at 11 : 25. If positions of ‘ +’ , ‘ –‘ , ‘ ×’ , ‘ ÷’ , ‘ <’ , ‘ >’ , ‘ =’ changed by rotation of angle 30°, 60°, 90°, 120°, 150°, 180°, 210° in the clockwise and anti-clockwise alternatively, then which of the following is correct statement?
    1. 6 (11:15) 4 (5:30) 1 (8:40) 2 (7:30) 3 (3:00) 1 (5:30) 8 (8:40) 4
    2. 6 (7:30) 4 (11:15) 1 (5:30) 2 (8:40) 3 (3:00) 1 (1:40) 1 (7:30) 8 (11:20) 4
    3. 6 (11:15) 4 (11:20) 1 (8:40) 2 (3:00) 3 (1;40) 1 (7:30) 8 (5:30) 4
    4. 6 (8:40) 4 (5:30) 1 (5:30) 2 (7: 30) 3 (1; 40) 1 (11 : 15) 8 (3:00)4

Direction (Q. 42): A couple organized a dinner party for the six friends. The host and hostess sat on the opposite sides of rectangular table. All of them were sitting in such format that male have one female on either of his side and vice-versa. Ashok is sitting opposite to Yashi, who is not the hostess. Anil has a female on his right and is sitting opposite to a female. Khushi is sitting to the hostess’ s right and next to Abdul. One person is sitting between Simran and Yashi who is not the hostess.

42. Which of the following statements is/are true about Aman?
    (i) Aman must be host.
    (ii) Seated at Yashi’ s right
    (iii) Seated diagonally opposite to Khushi.
    1. Only (i) 2. Only (ii)
    3. Only (i) and (ii) 3. Only (ii) and (iii)

43. According to the given matrix if MERCURY is coded as ‘ 3379288’ , JUPITER is coded as ‘ 3359468’ , then NEPTUNE will be coded as?

0	1	2	3	4	5	6	7	8
1	Y	U	F	T	D	Q	E	Q
2	R	A	X	W	M	S	J	D
3	P	D	I	Y	N	C	F	J
4	Z	N	U	B	V	P	C	Q
5	U	M	F	E	H	O	K	G
6	M	A	H	T	N	B	I	V
7	C	L	G	K	H	E	B	W
8	R	S	Y	G	X	T	V	L

    1. 3354336 2. 3357236
    3. 3554668 4. 3594688

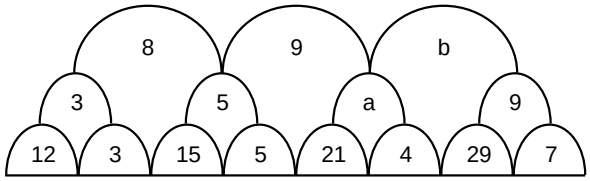
Direction (Q. 44): Study the given information and answer the question bellow:
Kit = Kat means Kat is the father of Kit
Kit @ Kat mean Kit is the sister of Kat
Kit ∆ Kat means Kat is the mother of Kit
Kit ↑ Kat means Kit is the brother of Kat
Kit ® Kat means Kat is the husband of Kit
Kit × Kat means Kat is the daughter of Kit

44. Which of the following indicates that Pik is the daughter-in-law of Mik?
1. Chik @ Pik ∆ Nik × Wik = Tik ® MiK
2. Chik × Pik ® Nik = Wik @ Tik ® Mik
3. Chik ↑ Pik ∆ Nik @ Wik ↑ Tik ® Mik
4. Chik ↑ Pik ® Nik ∆ Wik × Tik = Mik

45. the mathematical operators i.e. +, –, ×, ÷, =, < had placed at the minute hand position of the clock at clockwise angles of 78°, 162°, 210°, 114°, 240° and 312° respectively. The operators position had been rotated by 5 min, 7 min, 9 min, 11 min, 13 min and 15 min respectively clockwise and anti-clockwise alternatively. Find the correct combinations of operators in the form of time which satisfy the given equation:
[8 ? 20 ? 5 ? 9 ? 3 ? 38]
1. 7:08, 9:18, 10:20, 2:53, 6:44
2. 7:08, 6:44, 10:20, 9:18, 2:53
3. 6:44, 10:20, 9:18, 2:53, 7:08
4. 6:44, 7:08, 9:18, 10:20, 2:53

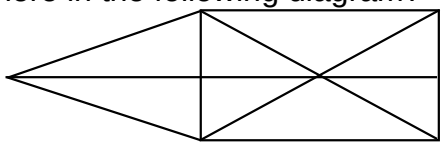
46. In the word ‘ QUARANTINE’ , which letter comes seven letters before the letter which comes four letters after the second appearance of the first letter to occur twice times in the word?
1. Q
2. U
3. A
4. N

47. Find the missing values of ‘ a’ and ‘ b’



1. 4, 5
2. 5, 7
3. 7, 10
4. 7, 5

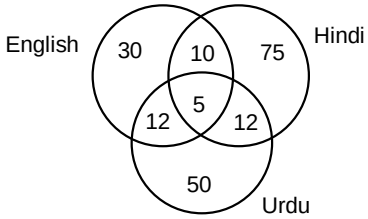
48. How many triangles are there in the following diagram?



1. 15
2. 16
3. 17
4. 18

49. There is a certain relationship between words on one side of : : and one word is given on another side of : : while another word is to be found from given options, having the same relation with the word as the words of the given pair. Choose the correct word from the given alternatives:
Lion : Claws : : Eagle : _____
1. Beak
2. Talon
3. Feather
4. Feet

50. Study the diagram given below:



500 students appeared in an examination comprising tests in English, Hindi and Urdu. The diagram gives the number of students who failed in different tests. What is the percentage of students who failed in at least two subjects?

1. 7.8
2. 6.8
3. 8.7
4. 0.078

51. Arrange the following in the right sequence, following the order in which they occur.

Seed	Sprout	Sapling	Plant	Tree
3	2	1	4	5

1. 3.2.1.4.5
2. 1.4.5.3.2
3. 2.4.5.3.1
4. 5.4.2.3.1

52. The statements below are followed by two conclusions labelled I and II. Assuming that the information in the statement is true, even if it appears at variance from generally established facts, decide which conclusion(s) logically and definitely follow(s) from the information given in the statements.

Statements:

I. All women are trains.
II. Some trains are painters.

Conclusions:

I. Some trains are women.
II. Some women are painters.

1. Only Conclusion I follows
2. Only Conclusion II follows
3. Both I and II Conclusions follow
4. Either Conclusion I or Conclusion II follows

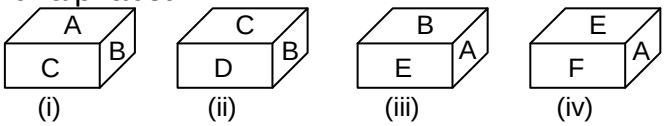
53. In a code language ABACUS is written as CDCEWU then how will you code SUDOKU in the same language?

1. WUFQMW
2. UWFQMW
3. FQUWMW
4. MWFQUW

54. Five friends A, B, C, D and E are sitting around a circular table facing the centre. A does not sit next to E. B is sitting to E' s immediate right. C does not sit next to D. D has E sitting immediately next to her. Therefore C is sitting immediately between:

1. D and A
2. D and B
3. B and A
4. E and A

55. The following figure shows four positions of a dice. Find out the alphabet which is opposite to face with alphabet B?



1. F
2. E

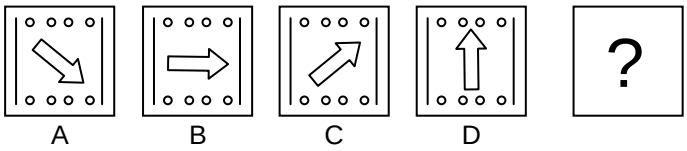
3. D 4. A

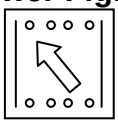
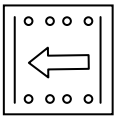
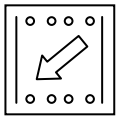
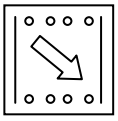
56. Given below is a question followed by two statements. Which option provides the right condition for answering the question? In which year was Jitan born?
I. Jitan is 25 years younger to his mother.
II. Jitan' s brother was born in 1994 is 35 years younger to his mother.
1. I alone is sufficient while II alone is not sufficient.
2. II alone is sufficient while I alone is not sufficient.
3. Either I or II is sufficient.
4. I and II together are sufficient.

57. If ' A – B' means ' A' is the wife of ' B' and if ' A + B' means ' A' is the daughter of ' B' while ' A ÷ B' means ' A' is the son of ' B' . What will be the relation of S with U if ' S + T ÷ U' ?
1. Mother 2. Sister
3. Daughter 4. Grand Daughter

58. Select the option that will correctly replace the question mark (?) in the series:
C10G, F16J, I22M, _____?
1. P28L 2. P26L
3. L27P 4. L28P

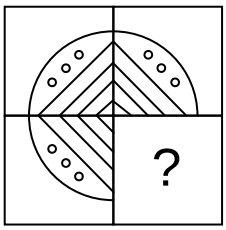
59. Find the next figure in the given series:
Problem Fig:

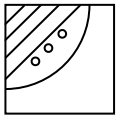
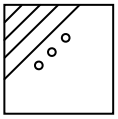
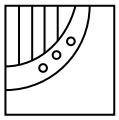
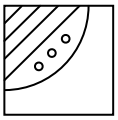


Answer Fig.
1. 
2. 
3. 
4. 

60. Dhiren walked 5 km towards North. Then he turned left and walked 5 km. Finally, he turns left and walks 10 km. In which direction is he from the starting point?
1. North 2. North-West
3. South 4. South-West

61. Which figure takes the place of ' ?' ?



1. 
2. 
3. 
4. 

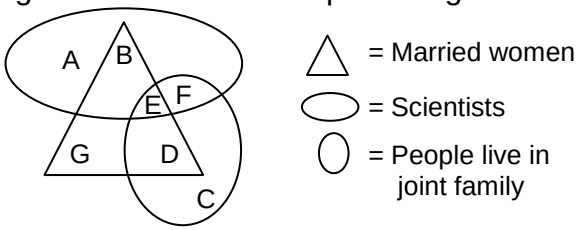
62. If 7th day of the month is 4 days after Friday, what day will it be on the thirty-first day of the month?
1. Tuesday
2. Thursday
3. Friday
4. Sunday

63. Find the missing number.
31425 is to 810
52346 is to 1024
45237 is to 1121
Therefore, 64382 is to?
1. 1122
2. 1123
3. 1315
4. 1316

64. Which number will take the position of ' ?' ?
1. 4
2. 3
3. 2
4. 1

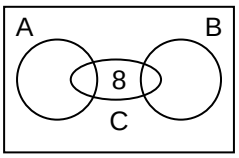
65. Akshi starts from her house and goes towards East. After walking 5 km in the same direction she meets her friend Ashfaq who was coming from the opposite direction. Both of them turn towards to the left of Ashfaq and walk together 4 km to reach his house. From there Akshi walks 5 km towards West. Now how mush distance she should walk to reach her house?
1. 4 km towards North
2. 4 km towards South
3. 4 km towards West
4. 4 km towards East

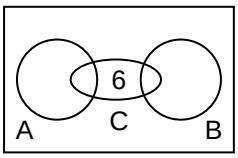
66. Study the following figure and answer the question given below:

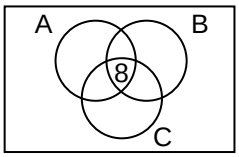


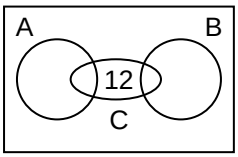
Which letter represents married scientists who do not live in a joint family?
1. A
2. B
3. D
4. G

67. Details of a survey conducted among 200 students of a school on a particular day is as follows:
40% of the students came by bicycle, 50% of the students came by walk and the remaining came by bus. 30% of the students who came by bicycle and 40% of the students who came by walk play cricket. 40% of the students who come by bus do not play cricket. If we represent students who came by walk as A, students who came by bicycle by B and students who play cricket by C, then choose the diagram which shows the survey result.

1. 

2. 

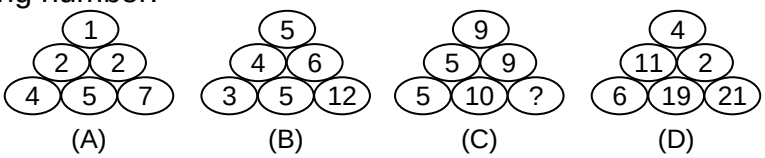
3. 

4. 

68. 21 students were standing in a row. Neethu wants to join among them. Teacher asked Neethu to stand behind Madhav who was standing at 10^{th} position from back. Looking at the height of the students, teacher interchanged the positions of the students standing 14^{th} from back with the student standing at 12^{th} from front. Now how many students are standing between Neethu and Madhav?

1. 0
2. 1
3. 2
4. 4 3

69. Find the missing number:



1. 19
2. 20
3. 7
4. 6

70. In 2020, January 3^{rd} is Friday. Then what will be the day of January 3^{rd} in 2021?

1. Friday
2. Saturday
3. Sunday
4. Tuesday

71. Find the value of I, II and III in the given figure?

W			Δ	∅	@	*		©
©		*	®	$		Δ	#	@
$	@	Δ	#		*		III	
#	*	$	©	@	∅	®	W	Δ
®	W	@	$	#	Δ		©	
Δ	©	∅	*		®	$	@	#
	I			®	©	#	∅	
@	®	#	∅	Δ	$			W
	$			II		@		®

1. **Δ, *, ®**
2. **Δ, □, ∅**

3. ∅, *, ®
4. ∅, □, ∅

Direction (Question 72):
In the coded language, the 12 digits of the clock are represented as 12 symbols as follows:

$ AN, #, AT, *, IN, – , IT, +, IF, Δ, AF

When any two symbols used together, then first symbol represent hour hand and second symbol represent minute hand of the clock.

72. The teacher starts his lecture at ' IT #' and teaches for ' AN *' . then he announced break for ' $ IN' hrs and resumed the class. At what time, he restarted his lecture?
1. Δ IF
2. AF AN
3. Δ AF
4. IF $

Direction (Question 73):
Study the following information carefully and answer the following question.
A word arrangement machine, when given an input line of words, rearranges them following a particular rule in each step. The following is an illustration of input and the steps of rearrangement.

Input → Ability, Logical, Reasoning, Competence, Success, Hardwork
Step I → Competence, Reasoning, Hardwork, Logical, Success, Ability
Step II → Ability, competence, Hardwork, Logical, Reasoning, Success
Step III → Logical, Competence, Reasoning, Hardwork, Success, Ability
Step IV → Hardwork, Ability, Reasoning, competence, Logical, Success

73. Which of the following will be Step VI for the input?
1. Logical, Success, Ability, Reasoning, Competence, Hardwork
2. Reasoning, Success, Logical, Ability, Competence, Hardwork
3. Logical, Reasoning, Competence, Hardwork, Success, Ability
4. Reasoning, Logical, Competence, Hardwork, Success, Ability

Direction (Question 74):
Study the following arrangement of symbols, numbers, and alphabets and answer the question given below:

E 5 ∏ R 2 @ 8 # 9 □ M ↓ S J 6 ↑ I L @ F 2 © U A Δ B N 3 $

74. In the given sequence, if vowels are substituted with the next letter of English alphabet series and the consonants are substituted with the letter preceding in the English alphabet series and the symbols are substituted with the vowels in the ascending order of English alphabet series, then how many consonants in the series will be preceded by vowels and followed by number?
1. 1
2. 2
3. 4
4. 6

75. In a botanical garden, there are numerous trees, shrubs and plants. The four trees i.e. Neem, Bamboo, Banyan and Peepal are there in a row. There are ten trees between Bamboo tree and Banyan tree and five trees between Neem tree and Bamboo tree. If seven trees are between Banyan tree and Peepal tree, nine trees behind Peepal tree and 13 trees ahead of Neem tree, then what could be the minimum numbers of tree in that row?

1. 20
2. 27
3. 32
4. 48

76. In certain code language, POPULAR is coded as [3236282230], VOCALIST is coded as [251615103129] then TEACHER will be coded in the language?
1. [1928983030]
2. [9186821015]
3. [2189826]
4. [2983160]

77. After noting down the odometer reading, that showed smallest four digit square number, Rimzim started driving to school with constant speed at 9 A.M. After one hour, he observed the delay in reaching school and doubled the speed to reach at 11 A.M. In school parking, he again noticed odometer which showed the number that reads same from both sides. What was the speed of Rimzim at 9:50 A.M.? (round to one decimal place)
1. 55.5 km/hr
2. 60.5 km/hr
3. 65.7 km/hr
4. 68.6 km/hr

78. At a crossing, there was a direction pole which was showing all the 8 correct directions. An engineer wrote the mathematical operators i.e., +, –, ×, ÷ and = at NE, SE, E, NW and W respectively. But due to heavy wind, direction pole rotated by 180°. Without noticing the new orientation of pole, he rotated the operators by 45° clock-wise. What will be the sequence of directions in the given equation?

[33 ? 11 ? 3 ? 6 ? 115]

1. W, SE, NW, E
2. SE, N, S, NW
3. NW, S, N, SE
4. NW, N, S, SE

79. If ' +' implies ' go'
' –' implies ' to'
'×' implies ' walk'
' =' implies ' early'
' <' implies ' before'
' >' implies ' Sun'
' ÷' implies ' rise'
then, identify the correct expression:
1. [5 go 4 to 3 walk 4 early 10 before 2 Sun 3 rise 2 before 3 Sun 4 rise 7 early 1]
2. [5 before 4 Sun 3 rise 4 go 10 to 2 walk 3 early 2 go 3 Sun 4 rise 7 walk 1]
3. [5 to 4 walk 3 rise 4 before 10 Sun 2 go 3 early 2 to 3 walk 4 rise 7 walk 1]
4. [5 to 4 walk 3 before 4 go 10 rise 2 early 3 walk 2 go 3 Sun 4 rise 7 walk 1]

Direction (Question 80):
The seven students named as Pika, Piku, Moa, Moi, Mau, Ina and Inu are doing class test around a round table by not facing each-other. The teacher shifted the Moa, Moi, Pika, Piku, Ina and Inu at equal distance. After that arrangement, Piku is sitting two place left of Ina who is sitting one place left of Moi. Moa makes an angle of 90° from Mou and at angle of 120° from Pika. Inu is sitting opposite to Pika.

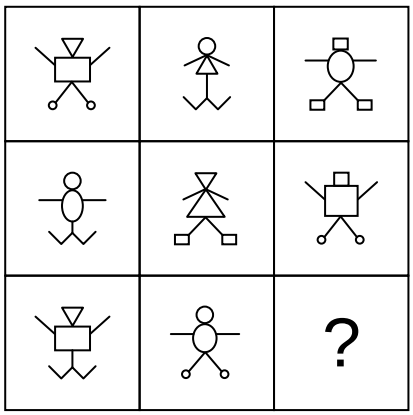
80. What is the shortest angle between Moi and Mou?
1. 51.43°
2. 81.43°
3. 150°
4. 90°

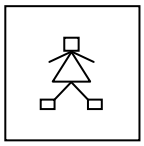
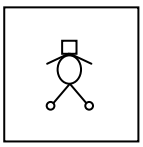
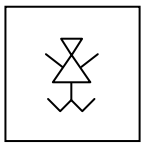
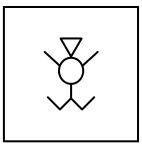
Direction (Question 81):
In the following question, the symbols are used with the following meanings as illustrated below:
Δ ^ O means ' Δ' is not greater than ' O' .
Δ * O means ' Δ' is neither greater than nor smaller than ' O' .
Δ # O means ' Δ' is not smaller than ' O' .
$\Delta \prod$ O means ' Δ' is neither smaller than nor equal to ' O' .
Δ □ O means ' Δ' is neither greater than nor equal to ' O' .

81. Assuming the statements to be true, find which of the four conclusions given below are definitely true.
Statements: (A) $\leftarrow$ ^ $\propto$ (B) % $\prod$ $ (C) $ # $\downarrow$ (D) $\leftarrow \prod$ $
Conclusion: (I) $\propto$ □ $ (II) $ * $\downarrow$ (III) $\leftarrow \prod \downarrow$
1. Only II is true
2. Only III is true
3. Only II and III are true
4. Only I and III are true

82. A defective watch showed the weird behaviour. It gains 5 seconds per 3 minutes for first hour, loss 10 seconds per 3 minutes in the second hour, again gains 15 seconds per 3 minutes for next one hour and so on. The watch showed the correct time at 7:00 A.M. What time it indicated at 7:00 P.M.?
1. 6:50 P.M.
2. 7:00 P.M.
3. 7:10 P.M.
4. 7:20 P.M.

83. Select a suitable figure from the four alternatives that would complete the figure matrix:



1. 
2. 
3. 
4. 

84. How many pairs of letter are there in the word ' Radioimmunoelectrophoresis' which have as many letters between them as in the English alphabet series?
1. 10
2. 14
3. 16
4. 18

85. Read the statements carefully and give the answer.

Statements:

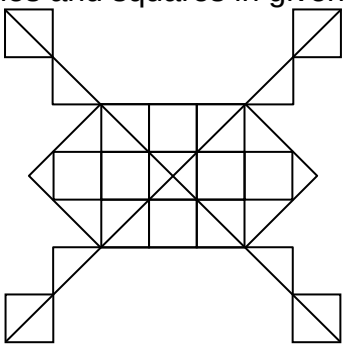
I. Tues is the wife of Wednes. Tues and Satur are only children of Fri. Thur is only daughter of Wednes. Mon is the grand-daughter of Fri.

II. Thur is married to Sun. Tues is mother-in-law of Sun. Tues is the only daughter of Fri. Mon is the grand-daughter of Fri.

How is Mon related to Tues?

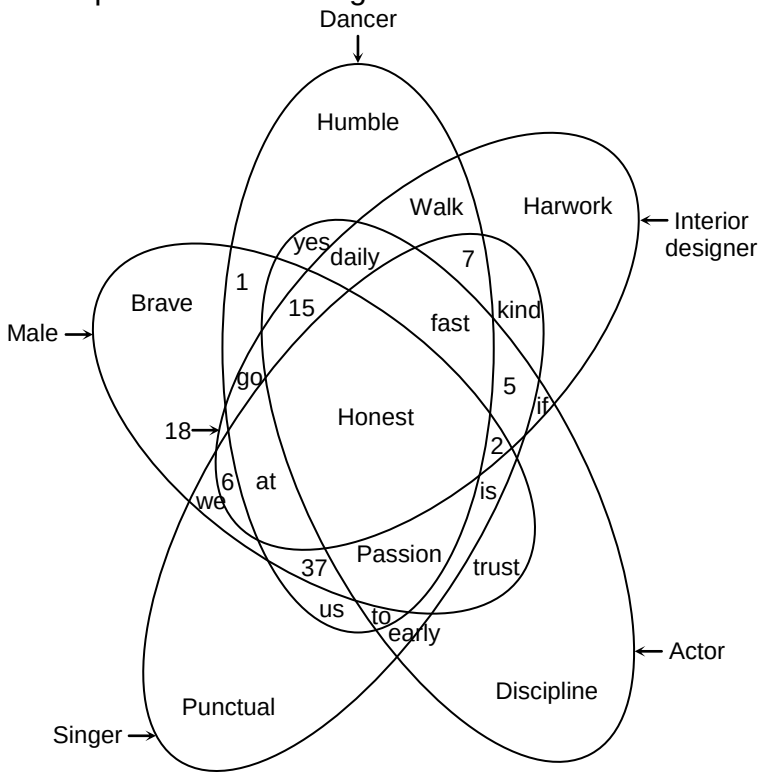
1. If the date in statement I alone are sufficient to answer the question, while the data in statement II alone are not sufficient to answer the question.
2. If the data in statement II alone are sufficient, while the date in statement I are not sufficient to answer the question.
3. If the data either in statement I alone or statement II alone are sufficient to answer the question.
4. If the data in both statements I and II together are necessary to answer the question.

86. Find out the number of triangles and squares in given figure:



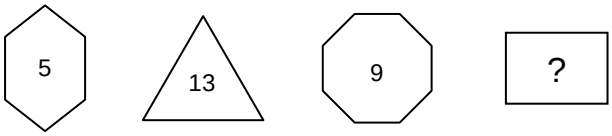
1. 44, 20
2. 44, 22
3. 46, 20
4. 48, 22

87. Female singer are represented in the figure as:



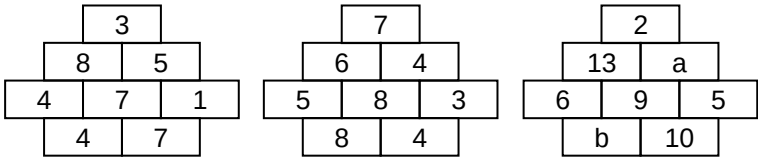
1. Fast Punctual Early us 5 kind to 7
2. Punctual Early is 2 kind 5 fast 7
3. 7 Fast Kind 5 trust early us to 2 is
4. We 6 at honest punctual fast 37 us to is

88. Find the missing value:



1. 17
2. 15
3. 5
4. 21

89. Find the values of ‘ a’ and ‘ b’ ?



1. 3, 12
2. 3, 3
3. 12, 3
4. 7, 9

90. If under some rule 4231 is transformed to 3087 and 6243 is transformed to 4086. Then to which number 7614 will transformed to?
1. 3085
2. 3088
3. 6174
4. 7164

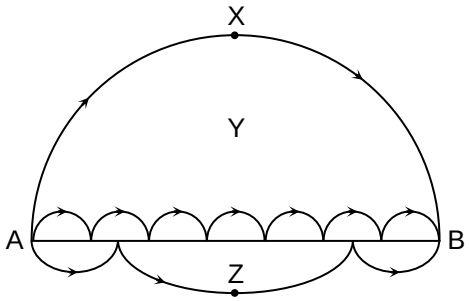
91. If 2833 $\rightarrow$ 213281 and 14122 $\rightarrow$ 122241, then 3858 $\rightarrow$?
1. 305080
2. 315182
3. 325283
4. 335588

92. In how many ways a square can be cut into two congruent parts (by a single straight cut)?
1. 2
2. 4
3. 6
4. infinitely many

93. It is impossible to divide a square into (may not be congruent) n squares, if n = ?
1. 4
2. 5
3. 6
4. 7

94. A is a number of the type 1223334444…. What will be the 198th digit from left?
1. 1
2. 5
3. 6
4. 8

95. There are three paths from A to B each consists of one or more semi-circles of unknown radii. The paths AXB, AYB, AZB are called I, II and III respectively. Which of the following is true?



1. The longest path is I
2. The longest path is II
3. The smallest path is III
4. Path III is mean of the paths I and II (as per the distance)

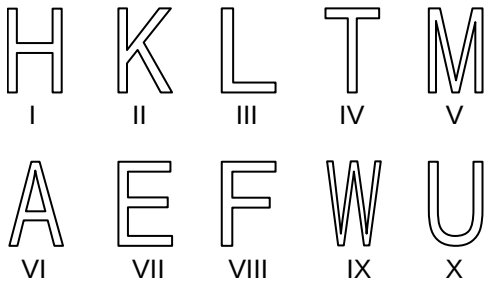
96. You have got a compass and a straight-edge (un-marked ruler). Each time you use compass (to draw an arc) you have to pay Rs. 20 and for using ruler (to draw line) you have to pay Re. 1. If you have got Rs. 1000 to spend (on these) what is the maximum number of pairs of perpendicular lines you can construct?

1. 12
2. 24
3. 489
4. 491

97. If $6 \rightarrow 4$, $12 \rightarrow 6$, $18 \rightarrow 6$, $24 \rightarrow 8$, $30 \rightarrow 8$ and $36 \rightarrow 9$, then $42 \rightarrow$?

1. 5
2. 6
3. 8
4. 9

98. Find the odd man out:



1. VI and VII
2. VI and X but not VII
3. VI only
4. V

99. What are the next two elements in the sequence?

2, 3, 5, 7, 13, 23, ?, ?

1. 29 and 31
2. 43 and 47
3. 43 and 83
4. 79 and 83

100. If $13 \rightarrow 5$, $17 \rightarrow 5$, $29 \rightarrow 7$, $41 \rightarrow 11$ then $73 \rightarrow$?

1. 11
2. 13
3. 15
4. 17

******* The End *******

SOLUTIONS
NTSE STAGE 2 2020-21
MENTAL ABILITY TEST (MAT)

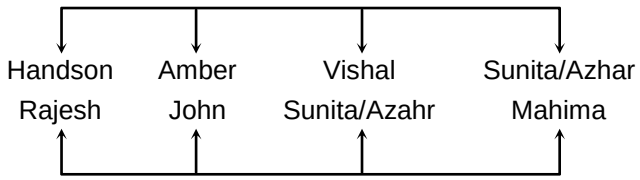
1. 3, 15, 63, 129, 1023, 4095

$3 = 2^2 - 1, 15 = 2^4 - 1, 63 = 2^6 - 1, 129 = 2^7 + 1$

$1023 = 2^{10} - 1, 4095 = 2^{12} - 1$

So wrong term is 129

2.



3. The schools of studies (Science/Humanities/Social Science Commerce/Edu./Engg and Tech)
Come under the jurisdiction of APC

4. APC, PD and FC are at the same level

5. **Statements:** Somedonutes are **dumb**
Some dumbs are sweets
All sweets are tall
No tall is donut
All donuts are **sugar**

Conclusion (i)Some sweets are sugar

Relevant statements: All sweets are tall
No tall is donut
All donuts are sugar

(A + E) + A = E + A = O^*

Some sugar are not sweets.

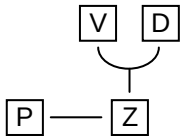
So some sweets are sugar is false conclusion

6. **B U I L D :C A W R Q**
Letters U and Ihaving reflection symmetry
Letters A and W having reflection symmetry
So, **L A U G H : G H T Z L**

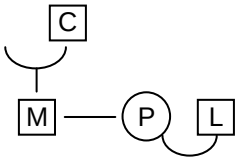
7. The lady clearly remembers that they got married in the month of February of the year 1955.
The man clearly remembers that he celebrated his 21st birthday with same year and it was Thursday, the 3rd February as a bachelor
Before 13th of February and after 3rd February and it was **WEEKEND**
i.e. Saturday or Sunday

3rd February – Thursday, 4thFebruary – Friday, 5th February – Statuary, 6th February – Sunday

8. + → Mother
– → Wife
× → Brother
÷ → Son
If P × Z ÷ D – V
"V is father of P"

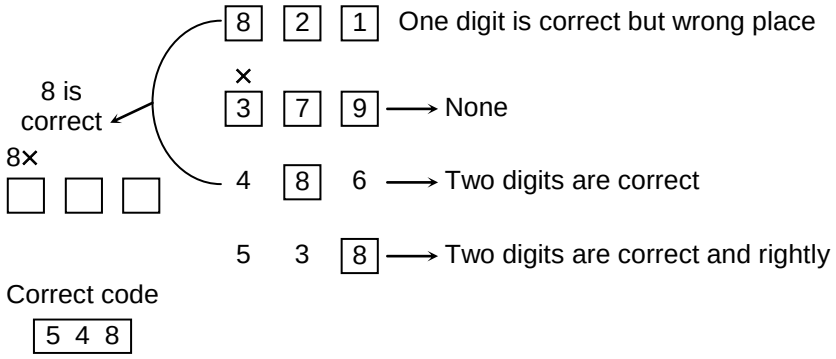


9. M ÷ C + P – L
M is brother-in-law of L



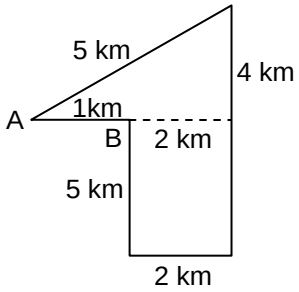
10. Spectacles, Earrings, Shoes, Bangles are wearing objects but bicycle is different thing from this group

11.



Correct code
5 4 8

12.



13. Number of odd dates in a week more than 1 so we can't say about the day

14. Many numbers possible

15. From statement-1
Pari >Ashvi>Kimaya>Vihane

16. **P A C M K I N G** after arrangement **A P E C A M I K G N**

17. Z X W, V T S, R P O, N L K, ??, F D C

Z,	V,	R,	N,	J
26,	22,	18,	14,	10

X,	T,	P,	L,	H
24,	20,	16,	12,	8

18. Sun $\rightarrow$ 520 visitors

Other day $\rightarrow$ 100 visitors

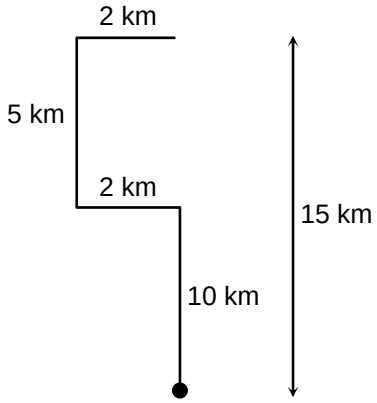
1^{st} (Sun)
8^{th} ″
15^{th} ″
22^{th} ″
29^{th} ″
$= 520 \times 5 = 2600$

Other 25 days $= 100 \times 25 = 2500$

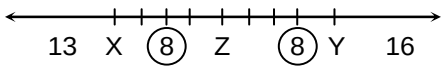
5100

Average $= \frac{5100}{30} = 170$

19.



20.



21. The series is based on the following difference:
X1, X5, X9, X13, X17, X21
This is further based on the difference of 14
So, answer is 2714985
Option (1)

22. $(4 \times 11) + (11 \times 1^2) = 55$
$(55 \times 9) + (9 \times 3^2) = 576$
$(576 \times 7) + (7 \times 5^2) = 4207$ and so on
Option (2)

23. Z = 2197, R = 729, P = 512, J = ?

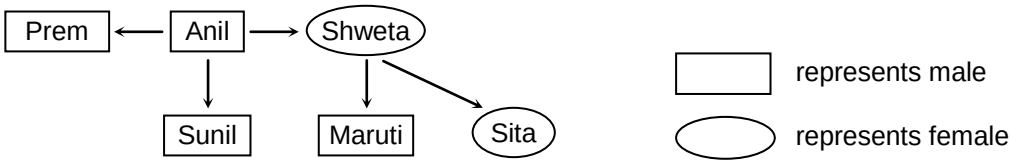
Z = 26 $\Rightarrow \left(\frac{26}{2}\right)^3 = 13^3 = 2197$

R = 18 $\Rightarrow \left(\frac{18}{2}\right)^3 = 9^3 = 729$

P = 16 $\Rightarrow \left(\frac{16}{2}\right)^3 = 8^3 = 512$

I = 10 $\Rightarrow \left(\frac{10}{2}\right)^3 = 5^3 = 125$

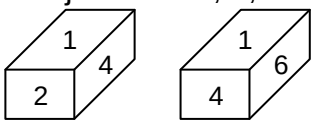
24.



Clearly Sunil is cousin of Maruti

25. By observation

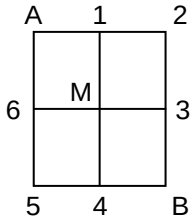
26. 1 adjacent to 2, 4, 6 means opposite of 1 will be either 3 or 5



Therefore, 3 and 5 are definitely adjacents

27. By comparing,
Sun shines brightly =>ba lo sul…(1)
Light comes from sun =>dopikup lo nro…(2)
We get, sun common
So, Sun code will be 'lo'
Houses are brightly lit => 'kado ula ariba' …(3)
By comparing (1) and (3)
Brightly would be 'ba'

28. Let mark the pathways as follows:



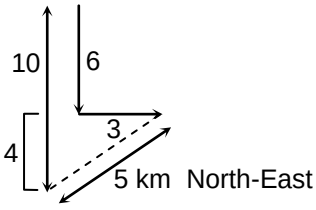
He will be covering like this

I-way :	A	1	2	3	B
II-way :	A	1	M	3	B
III-way:	A	1	M	4	B
IV-way :	A	6	M	3	B
V-way :	A	6	M	4	B
VI-way :	A	6	5	4	B

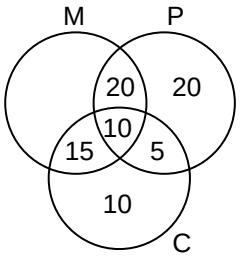
There are total 6-ways

29. By observation

30.

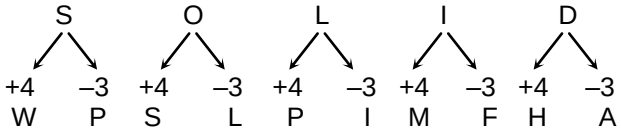


31. n(M) = 45
n(P) = 55
n(C) = 40
n(M ∩ P) = 30
n(P ∩ C) = 15
n(M ∩ C) = 25
n(M ∩ P ∩ C) = 10



Total % of students studying
= 20 + 10 + 15 + 5 + 10 + 20 = 80%
Total % of students not studying = 100 – 80 = 20%

32. Each letter of SOLID is first decoded as +4 and then followed by –3

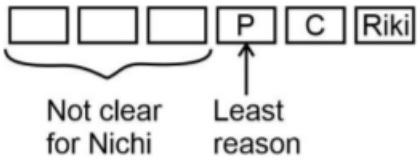


Similarly the code for ATEXXQIBVO will be WATER

33. Opposite pair of dots will be
2 ↔2
3 ↔ 5
1 ↔ 6 Opposite to 1 will be 6

34. Z(26) + (4 + 4 + 5) = 39 ⇒ 13(M)
S(19) + (7 + 2 + 5) = 33 ⇒ 7(G)

35. **Logical -**
Sri > Ruchi >Puchi
Nichi>Chiki
Puchi>Chiki
Reasoning–
Sri > Ruchi >Puchi
Riki>Nichi>Chiki> Sri > Ruchi >Puchi
Logical order –



36. **Logical –**

Sri > Ruchi >Puchi

Nichi>Chiki

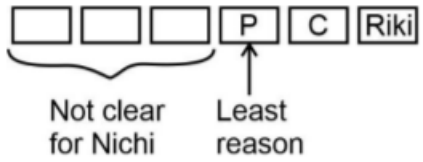
Puchi>Chiki

Reasoning-

Sri > Ruchi >Puchi

Riki>Nichi>Chiki> Sri > Ruchi >Puchi

Logical order-



37. Blue →1 male patient

Pink → 1 female patient

Green → 2 male and 3 female

Red →–1 male and –2 female

B → 10 → 10 × 1 = 10 male

P → 06 → 06 × 1 = 06 female

G → 07 → = 14 male + 21 female

R → 03 → –3 male – 6 female

(24 – 3) male and (27 – 6) female

21 male and 21 female

2nd sequence

B	P	G	B	B	G	P	B	R	P	B	P	B	G	G	R	B	G	B	B	G	P	P	R	G	B
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26

P	R	B	B	B	G	P	B	R	R	B	R	B	G	B	R	B	G	B	B	B	R	P	R	B	B

B → 14 → 14 male

P → 2→ 2 Female

G → 3 → 6 male + 9 female

R → 7 →–7 male –14 female

13 male + (–3 female)

21 – 3 = 18 female

38. Prime number as it is in it position

4	9	1	13	15	14	4	→	22	33	1	13	35	27	22
D	I	A	M	O	N	D								

22 → 2 × 2

13 → Prime number

13 → Prime number as it is

B	R	O	N	Z	E	⟶	2	23	335	27	21	3	5
2					5								

2 → Prime number

5 → Prime number

S I L V E R ⟶ 19 33 22 23 11 5 29

19 — 5 (Prime number) — 19 (Prime number) — 5 (Prime number)

39. Tuesday noon to next Tuesday 2 PM = 170 hours

Time gain = $2 + 4 + \frac{48}{60} = \frac{34}{5}$ min

$\frac{34}{5}$ min gained in 170 hours

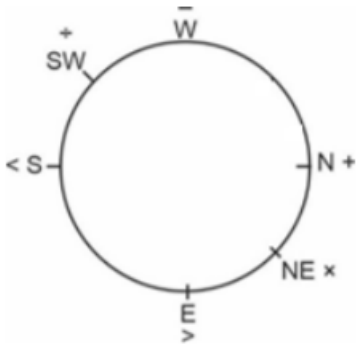
1 min gain = $\frac{170 \times 5}{34}$ = 25 hours

2 min slow = 2×25 hours = 50 hours

Thursday 12 noon + 50 hours = Thursday 2 pm

Option (3)

40. North will become West and so on. So the diagram will be as follows:



While solving the options and substituting the signs

(1) 6 N 4 S W 8 NE 2 E 9 W 6 N E 2 S W 3 E 3 N E 2 S W 1 W 5

$= 6 + 4 \div 8 \times 2 > 9 - 6 \times 2 \div 2 > 3 \times 2 \div 1 - 5$

$= 6 + \frac{4}{8} \times 2 > 9 - 6 \times \frac{2}{3} > 3 \times \frac{2}{1} - 5$

= 6 > 5 > 1 condition satisfied

41. **1**

+ → 7:25 + 0:05 = 7:30

× → 5:15 + 0:15 = 5:30

÷→ 9:00 – 0:20 = 8:40

<→ 10:55 + 0:25 = 11:20

>→ 3:30 – 0:30 = 3:00

= → 1:05 + 0:35 = 1:40

– → 11:25 – 0:10 = 11:15

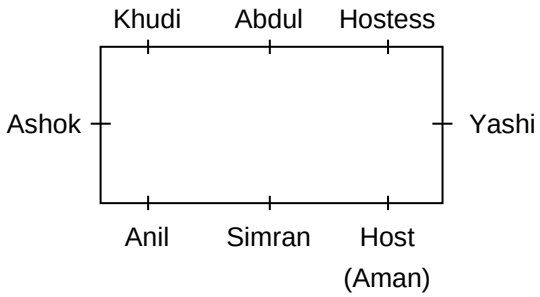
(1) $6 - 4 \times 1 \div 2 + 3 > 1 \times 8 \div 4$
$4 + 3 > 2$ (correct)

(2) $6 + 4 - 1 \times 2 \div 3 > 1 = 8 < 4$

(3) $6 - 4 < 1 \div 2 > 3 = 1 + 8 \times 4$
$2 < ½ > 3 = 33$

(4) $6 \div 4 \times 1 \times 2 + 3 = 1 - 8 > 4$
$3/2 \times 2 = -7$ Clearly only (1) is correct

42.



43. M → 2, 5 5, 2 6, 1 7, 6

E → 1, 7 5, 4

R → 2, 1 8, 1

C → 3, 6 4, 7 5, 1 7, 1

U → 1, 2 3, 4

Y → 1, 1 3, 8 8, 3

J → 2, 7

P → 3, 1 4, 6

I → 3, 3 6, 7 6, 4

T → 1, 4 4, 2 8, 6 6, 5

N → 3, 5

Codes are based on sum of digits of respective letters

M	→	7
E	→	8, 9
R	→	3, 9
C	→	9, 8, 11
U	→	3, 6
Y	→	2, 7, 11
J	→	9, 11
P	→	4, 10
I	→	6, 13
T	→	5, 10, 14
N	→	8, 6, 11

Reject two digit values

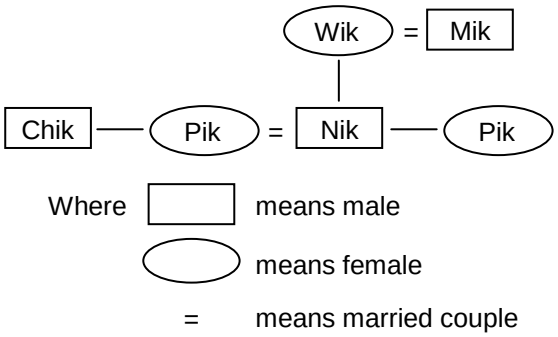
M E R C U R Y → 7 8 3 8 3 9 2

After shuffling : 3 3 7 9 2 8 8

Similarly N E P T U N E → 6 9 4 5 3 8 8

After shuffling : 3 5 9 4 6 8 8

44.



45. $+ \rightarrow 78° \rightarrow 13 + 5 = 18$
$- \rightarrow 162° \rightarrow 27 - 7 = 20$
$\times \rightarrow 210° \rightarrow 35 + 9 = 44$
$\div \rightarrow 114° \rightarrow 19 - 11 = 08$
$= \rightarrow 240° \rightarrow 40 + 13 = 53$
$< \rightarrow 312° \rightarrow 52 - 15 = 37$

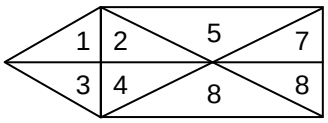
6 : 44	7 : 08	9 : 18	10 : 20	2 : 53
↓	↓	↓	↓	↓
×	÷	+	−	=

$8 \times 20 \div 5 + 9 - 3 = 38$
$8 \times 4 + 6 = 38$
$38 = 38$

46. QUARANTINE
Second appearance is A. And (A + 4) i.e. N and seven letters before N i.e. U

47. $(12 + 3) \div 5 = 3$,
$(15 + 5) \div 4 = 5$,
$(21 + 4) \div 5 = 5$,
$(29 + 7) \div 4 = 9$,
So answer is a = 5

48. $\Delta 1$, $\Delta 12$, $\Delta 13$, $\Delta 2$, $\Delta 24$, $\Delta 246$, $\Delta 245$, $\Delta 3$, $\Delta 34$



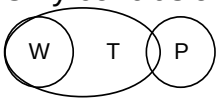
$\Delta 4$, $\Delta 5$, $\Delta 578$, $\Delta 6$, $\Delta 678$, $\Delta 7$, $\Delta 78$, $\Delta 8$
Hence, number of triangle is 17

49. Lion is related to claws in the same way Egle is related to Talon

50. Total number of students appeared i.e. 500 and number of students who failed in at least two subjects i.e. 10 + 12 + 12 + 5 = 39
So, $\frac{39}{500} \times 100 = 7.8\%$

51. Seed → sprout → Sapling → Plant → Tree

52. Only conclusion I follow

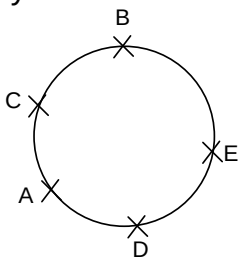


As if all women are trains then some trains are women is correct and the second conclusion does not follow as there is no confirm relation between women and painters.

53.

A	B	A	C	U	S
↓+2	↓+2	↓+2	↓+2	↓+2	↓+2
C	D	C	E	W	U

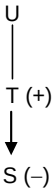
54. By observation



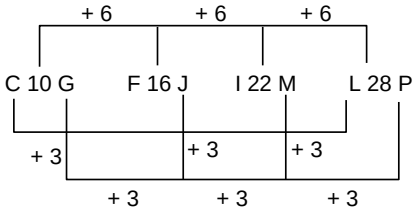
55. From Dice (iii) and (iv) two sides are common between them
i.e. E and A. So the third sides become opposite to other in both the dices. It means B is opposite F.

56. By observation both I and II are sufficient

57. S + T = U
Grand daughter

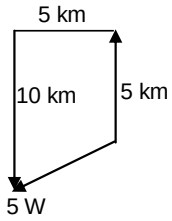


58.



59. By observation

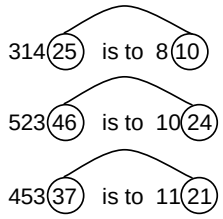
60. South – West



61. By observation

62. Friday + 4 = Tuesday is 7^{th} day
7, 14, 21, 28 days is Tuesday
31 day = Tuesday + 3 = Friday

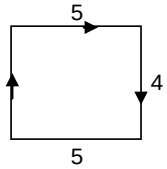
63.



3 + 1 + 4 = 8, 2 × 5 = 10 so, 31425 is 810
5 + 2 + 3 = 10, 4 × 6 = 24 so, 52346 is 1024
Now 64382 is → (6 + 4 + 3), (8 × 2) = 1316

64. Wrong question

65.



4 km towards north

66. By observation

67. Total students = 200
Students come by bicycle = 40% = 80 Students came by walk = 50% = 100 Students came by bus = 10% = 20
Students who came by bicycle and play cricket = 30% = 24
Students who came by walk and play cricket 40% = 40
Students who came by bus and do not play cricket = 40% = 8
So students who came by bus and play cricket = 20 – 8 = 12

68. Total + 1 = Top + Bottom 21 + 1 = T + 10
So, Madhav from Top is 12th
So by question Neethu is 13th from the top
Now, Total students are 22
So, 14th from the back means 9th from the top
So, by question Madhav is at 9th from the top
So, 3 students between Madhav and Neethu.

69. 4 + 2 + 1 = 7, 5 + 2 = 7 , 7
3 + 4 + 5 = 12, 6 + 6 = 12, 12
6 + 11 + 4 = 21, 19 + 2 = 21
5 + 5 + 9 = 19, 10 + 9 = 19, 19

70. 3rd Jan is Friday
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec Jan
28 + 1 + 3 + 2 + 3 + 2 + 3 + 3 + 2 + 3 + 2 + 3 + 3
Friday + $\frac{58}{8}$ = 8W + 2P
Friday + 2 = Sunday

71. **1**
By Sudoku logic

72.

1	2	3	4	5	6
$,	AN ,	# ,	AT ,	* ,	IN ,

7	8	9	10	11	12
− ,	IT ,	+ ,	IF ,	Δ ,	AF

Class start at - IT, #	=	8 : 15
Teaches till - AN, *	=	2 : 25
Class till	=	10 : 40
Break	=	1 : 30 hr
Time	=	12 : 10

AF AN

73. Step 1 >> arrangement alphabetically taking last alphabet of each word
step2>> Alphabetic arrangement taking 1st alphabet
Step 3>> Taking 2nd last alphabet of each word
step 4 > Second alphabet of each word
Step 5 >> 3rd last alphabet
And lastly Step 6>> alphabetic arrangement on basis of 3rd alphabet

74. F 5 A Q 2 E 8 I 9 O L U R I 6 U J K A E 2 E V B I A M 3 O

75.

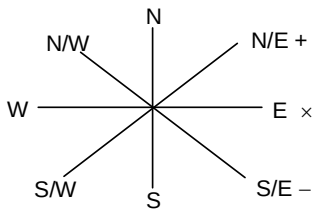
7 Bamboo – – – Peepal – – – Neem – – – – Banyan 1

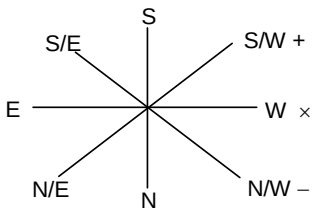
13 + 7 = 20

76. POPULAR is coded as 16-15-16-21-12-1-18
L + R = 18 + 12 = 30
U + A = 21 + 1 = 22
P + L = 16 + 12 = 28
O + U = 15 +21 = 36
P + P = 16 + 16 = 32
Similarly; code of VOCALIST will be:
V + C = 22 + 3 = 25
O + A = 15 + 1 = 16
C + L = 3 + 12
A + I = 1 + 9 = 10
L + S = 12 + 19 = 31
I + T = 9 + 20 = 29

77. Reading in odometer at = 1024 km
reading in parking
may be
1 2 2 1
1 3 3 1
1 4 4 1
1 5 5 1 etc
if reading in parking 12 distance corend
1221 – 1024 = 197
let initial speed = A.T.Q. $\frac{147}{142}$ = 65.7 km

78.





move 45°

SE	=
S	÷
W	+
NW	×
N	–

33 × 11 ÷ 3 – 6 = 115
$33 \times \frac{11}{3} - 6 = 115$
121 – 6 = 115
NW, S, N, SE

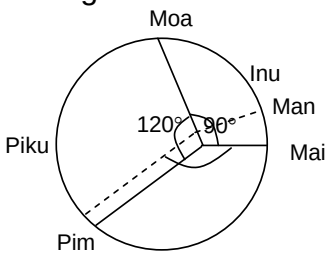
79. $5 - 4 \times 3 < 4 + 10 \div 2 = 3 \times 2 + 3 > 4 \div 7 \times 1$

$5 - 12 < 4 + 5 = 6 + 3 > \frac{4}{7} \times 1$

$=-7<9 \ = 9 > \frac{4}{7}$

$= -7<9>4/7$

80. 150Degree



81. Statement (A) $\leftarrow \leq \alpha$

(B) % > $

(C) $ $\geq \downarrow$

(D) $\leftarrow >$ $

Conclusion (1) $\alpha <$ $ ($\times$)

(2) $ = $\downarrow$ ($\times$)

(3) $\leftarrow > \downarrow$ ($\surd$)

Only conclusion (3) is correct

82.

5 sec gain ——— 3 min
× 20 × 20] 1 hour
10 sec gain ——— 3 min

10 sec loose ——— 3 min
× 20 × 20] 1 hour
200 sec loose ∴ 60 min

15 sec gain ——— 3 min
× 20 × 20] 1 hour
300 sec gain ——— 60 min

Therefore in 12 hours from 7:00 Am – 7:00 PM

100 – 200 + 300 - 400 + 500 - 600 + 700 -800 +900 -1000 +1000 – 1200

$\Rightarrow$ (–600 sec)

i.e. 10 min lose $\Rightarrow$6 : 50 PM

83. By observation

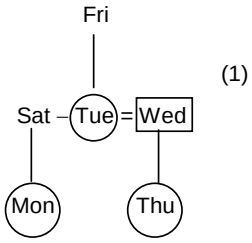
84. The following pair as follows

AL, DR, IM, NO, NT, OT, ES, CH

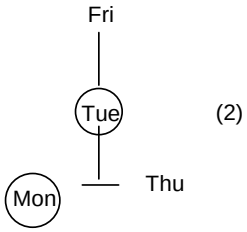
OP, EH, OT, ER, MO,PR

 # —> Question has different answers considering two different language segments.

85.



(1)



(2)

Whereas circle represent female, square male and double parallel lines means husband wife relation.

86. By observation

87. By observation

88. 5 + 6 (hexagon) = 11
(1 + 3) + 3 (triangle) = 7
9 + 8 (octagon) = 17
(2 + 1) + 4 (square) = 7

All of these are prime numbers

89. Figure (I), (II) and (III)
Sum of (1st and 2nd row) numbers
(3 + 8 + 5), (7 + 6 + 4), (2 + 13 + a)
16, 17, 2 + 13 + a = 18
a = 3
Similarly; Last row from figure (I), (II) and (III)
(4 + 7), (9 + 4), (b + 10)
11, 12, b + 10 = 13
b = 3

90. (3)
Numbers are first arranged in descending order and then it's ascending order is subtracted from it to get the solution.
4321 – 1234 = 3087
6432 – 2346 = 4086
Similarly,
7641 – 1467 = 6174

91. (2)
In 3858 $\rightarrow$ number 3 comes 1 time number 5 comes 1 time number 8 comes 2 times
$\therefore$ According to this logic answer is 315182

92. By observation

93. Except 5 all squares are possible.

94. Series are as follows
1 2 2 3 3 3 4 4 4 4 ……. 15 1 6 1

95. Let the radius 'r' of semicircle in the II path
So, $\rightarrow$(Path I) AXB 1/2 .2 rπ(7r) = 7π
(Path II) AYB 1/2 . 2πr × 7= πr × 7 (7 semicircle)
(Path III) for AZB, 2 types of semicircle
Small semicircle diameter is 3r
So ½.2π(3r/2)x2(for two semicircle)
$\therefore$ 3πr

For bigger semi-circle
Radius is 4r
$\therefore$ ½ . 2π(4r)= 4πr
Total=7πr

96. For 1st line ₹1 for the perpendicular line, we need to mark 4 arcs i.e. ₹80. Now we will draw 1 line by joining the arc
$\therefore$ ₹82 for a pair.
$\therefore$ 1000/82 = 12.195 (approx..)
= 12 pairs
 # —> Question has different answers considering two different language segments.

97. 6(First number) $\rightarrow$ 4(second number)
second number is the total number of factors of first number
Hence total number of factor of 42 is
$42 \rightarrow 2^1 \times 3^1 \times 7^1$
$(1 + 1) \times (1 + 1) \times (1 + 1)$
$= 2 \times 2 \times 2 = 8$

98. Mirror image of vowels by the observation. The mirror image of VI and X will be same but not of VII.

99. 2, 3, 5, 7, 13, 23, ?
Prime Numbers : 2, 3, 5, 7, 11, 13, 17, 19, 23, 29, 31, 37, 41, 43, 47,
Prime Numbers sequence :
1, 2, 3, 4, 6, 9, (14)th no. prime number is the answer
+1 +1 +1 +2 +3 +5
14^{th}, 22^{nd} no. prime
+8

100. (1)

If $13 \rightarrow 5$, $17 \rightarrow 5$, $29 \rightarrow 7$, $41 \rightarrow 11$

$2^2 + 3^2 = 4 + 9 = 13 \Rightarrow 2 + 3 = 5$

$1^2 + 4^2 = 1 + 17 = 17 \Rightarrow 1 + 4 = 5$

$2^2 + 5^2 = 4 + 25 = 29 \Rightarrow 2 + 5 = 7$

$4^2 + 4^2 + 3^2 = 16 + 16 + 9 = 41 \Rightarrow 4 + 4 + 3 = 11$

then $73 \rightarrow 8^2 + 3^2 \Rightarrow 8 + 3 = 11$

ANSWER KEY-NTSE STAGE 2 2020-21 (MAT)

QUESTION	ANSWER	QUESTION	ANSWER	QUESTION	ANSWER	QUESTION	ANSWER
1	3	26	3	51	1	76	3
2	1	27	3	52	1	77	3
3	1	28	3	53	2	78	3
4	2	29	1	54	3	79	4
5	1	30	4	55	1	80	3
6	4	31	4	56	4	81	2
7	2	32	4	57	4	82	1
8	4	33	4	58	4	83	1
9	4	34	3	59	1	84	2 #
10	1	35	4	60	4	85	1
11	4	36	2	61	4	86	4
12	3	37	1	62	3	87	1
13	4	38	4	63	4	88	4
14	4	39	3	64	Incomplete Question	89	2
15	1	40	1	65	1	90	3
16	2	41	1	66	2	91	2
17	3	42	1	67	4	92	4
18	2	43	4	68	4	93	2
19	1	44	4	69	1	94	1
20	3	45	4	70	3	95	4
21	4	46	2	71	1	96	1 #
22	2	47	2	72	2	97	3
23	2	48	3	73	2	98	2
24	1	49	2	74	2	99	3
25	2	50	1	75	1	100	1

 # —> Question has different answers considering two different language segments.